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DIALOG(R)File 351:Derwent WPI
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013328239 **Image available**

WPI Acc No: 2000-500178/200045

XRAM Acc No: C00-150236

XRPX Acc No: N00-370766

Piezoelectrically driven ink-jet recording head has its pressure generating chamber sealed by rectangular plate that is laminate of elastically deformable polymer film and rolled metal plate with etched island portions

Patent Assignee: SEIKO EPSON CORP (SHIH)

Inventor: FURUHATA A; TAKAHASHI T; WATANABE M

Number of Countries: 026 Number of Patents: 004

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 1024001	A2	20000802	EP 2000101419	A	20000125	200045 B
JP 2000280474	A	20001010	JP 99329241	A	19991119	200056
EP 1024001	B1	20030604	EP 2000101419	A	20000125	200344
DE 60003088	E	20030710	DE 603088	A	20000125	200353
			EP 2000101419	A	20000125	

Priority Applications (No Type Date): JP 99329241 A 19991119; JP 9921450 A 19990129

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
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EP 1024001	A2	E	16	B41J-002/14	
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Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI

JP 2000280474	A		8	B41J-002/045	
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EP 1024001	B1	E		B41J-002/14	
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Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

DE 60003088	E			B41J-002/14	Based on patent EP 1024001
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Abstract (Basic): EP 1024001 A2

NOVELTY - An ink-jet recording head has a pressure generating chamber and/or reservoir sealed by a rectangular plate which is a laminate of an elastic plate (16), elastically deformable by external pressure but having ink resistance, and a metal plate (15) made from rolled etchable metal. The longer direction of the plate is perpendicular to the rolling direction of the rolled metal plate.

DETAILED DESCRIPTION - Preferred Features: The elastic plate is a polymer film that is annealed before lamination to the metal plate. The elastic plate may be a metal plate which is laminated to the rolled metal plate with adhesive. The ink-jet recording head is especially a channel unit having a nozzle opening, a pressure generating chamber, a reservoir, and an ink supply port. The unit is sealed by the plate, which has an island portion (12) opposite the pressure generating

chamber and a diaphragm portion and a piezoelectric vibrator abutting the island portion for ejecting an ink droplet. A series of island portions are especially arranged perpendicular to the longer direction of the plate. An INDEPENDENT CLAIM is included for a method of producing the elastic plate by laminating and bonding a polymer film and a rolled metal plate and etching a through hole in the metal plate to provide an elastically deformable region.

USE - An ink jet recording head in which a piezoelectric vibrator in a longitudinal vibration mode is used as the driving source.

ADVANTAGE - The elastic plate is prevented from deforming during its construction and creating a permanent positional error between it and the ink channel.

DESCRIPTION OF DRAWING(S) - The figure shows an enlarged island portion of the elastic plate.

Island portion (12)
diaphragm portions (13,14)
metal plate (15)
polymer film (16)
bridge portions (18)
pp; 16 DwgNo 5/9

Title Terms: PIEZOELECTRIC; DRIVE; INK; JET; RECORD; HEAD; PRESSURE;
GENERATE; CHAMBER; SEAL; RECTANGLE; PLATE; LAMINATE; ELASTIC; DEFORM;
POLYMER; FILM; ROLL; METAL; PLATE; ETCH; ISLAND; PORTION
Derwent Class: A97; G05; M13; M14; P75; T04
International Patent Class (Main): B41J-002/045; B41J-002/14
International Patent Class (Additional): B41J-002/16
File Segment: CPI; EPI; EngPI
Manual Codes (CPI/A-N): A12-W07F; G05-F03; M13-H03; M13-H05
Manual Codes (EPI/S-X): T04-G02
Polymer Indexing (PS):
<01>
001 018; P0000; S9999 S1285-R
002 018; Q9999 Q9392 Q7330; Q9999 Q8786 Q8775; K9416; ND01; B9999
B3930-R B3838 B3747; Q9999 Q7818-R; N9999 N7192 N7023; N9999 N6188
N6177; K9552 K9483; K9676-R

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DIALOG(R)File 351:Derwent WPI
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013935524 **Image available**
WPI Acc No: 2001-419738/200145
XRPX Acc No: N01-310951

Ink-jet print head for ink-jet printer, has stainless steel plate etched at both surfaced to form partition wall defining pressure chamber and land aligned to pressure chamber

Patent Assignee: SEIKO EPSON CORP (SHIH)

Inventor: KITAHARA T

Number of Countries: 027 Number of Patents: 004

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 1099556	A2	20010516	EP 2000124746	A	20001113	200145	B
JP 2001277524	A	20011009	JP 2000290507	A	20000925	200174	

JP 3389987	B2	20030324	JP 2000290507	A	20000925	200323
JP 2003175602	A	20030624	JP 2000290507	A	20000925	200351
			JP 2002306077	A	20000925	

Priority Applications (No Type Date): JP 2000290507 A 20000925; JP 99321328 A 19991111; JP 99328458 A 19991118; JP 200019135 A 20000127

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 1099556	A2	E	47	B41J-002/14	
Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT					
LI LT LU LV MC MK NL PT RO SE SI TR					
JP 2001277524	A		26	B41J-002/16	
JP 3389987	B2		25	B41J-002/16	Previous Publ. patent JP 2001277524
JP 2003175602	A		24	B41J-002/045	Div ex application JP 2000290507

Abstract (Basic): EP 1099556 A2

NOVELTY - A partition wall (7) on front side of a stainless steel plate (2) by etching, forms pressure chamber (8), ink supply passage (9) and ink chamber (10). The back side of the plate etched to form a land (11), contacts with piezoelectric vibrator (12). A polymer film (15) surrounds the land such that the vibrator causes film to change the pressure in the chamber (10) which ejects ink through nozzle holes (19) in plate (18) on the steel plate.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for ink-jet printer head manufacturing method.

USE - For use in ink-jet printer.

ADVANTAGE - The difference in ink jetting characteristic between the nozzle openings is reduced, since the pressure chamber and the land are aligned with an improved accuracy and also the stainless steel plate surfaces are formed by etching processes, thereby avoiding any adhesive protrusion in the pressure chamber and the ink-jet passage. The sectional area of the ink inlet passage is dependent only on the thickness of the front surface of stainless steel plate. The difference in ink jetting characteristics between the nozzle holes is reduced by reducing the difference in sectional area between the ink inlet passages. The ink-jet printer head does not have any components formed by electro forming on patterns and removed from the patterns, thus not reducing the accuracy of printer head, which is advantageous in cost.

DESCRIPTION OF DRAWING(S) - The figure shows the sectional view of ink-jet printer head.

Stainless steel plate (2)
 Partition wall (7)
 Pressure chamber (8)
 Ink supply passage (9)
 Ink chamber (10)
 Land (11)
 piezoelectric vibrator (12)
 Polymer film (15)
 Nozzle plate (18)
 Nozzle holes (19)
 pp; 47 DwgNo 1/34

Title Terms: INK; JET; PRINT; HEAD; INK; JET; PRINT; STAINLESS; STEEL;
 PLATE; ETCH; SURFACE; FORM; PARTITION; WALL; DEFINE; PRESSURE; CHAMBER;
 LAND; ALIGN; PRESSURE; CHAMBER

Derwent Class: P75; T04; U14

International Patent Class (Main): B41J-002/045; B41J-002/14; B41J-002/16
 International Patent Class (Additional): B41J-002/055

File Segment: EPI; EngPI

Manual Codes (EPI/S-X): T04-G02A; U14-H01B